

THE NATURE OF THE BAIT BUSINESS IN WISCONSIN

An Informational Report to the Natural Resources Board

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**Administrative
Report No. 13**

**Fish Management
Bureau
Department of
Natural Resources
Madison, Wisconsin
July 1982**

INTRODUCTION

Sale of live bait is about a \$1.5 million business in Wisconsin, according to a 1969 statistical report, and sales are probably twice as big today. In 1980, 1,249 licenses to sell bait were sold. These dealers are scattered around the state (Fig. 1), and they are especially concentrated in Wisconsin's lake districts.

But the possession of a license is not completely descriptive of the bait business. Although some normal assumptions concerning bait sale are that bait is harvested in Wisconsin, consists of native fish, and that bait businesses are run by numerous people operating independently, the organization actually consists of wholesalers, retailers, and collectors. The wholesaler acquires great quantities of bait and trucks it to a distribution point. Most retailers buy from a wholesaler and only a portion catch their own bait. The organization could be further broken down into small and large wholesalers, with small wholesalers buying from large wholesalers and taking care of bait distribution in a locality.

This report discusses the status of the bait business in Wisconsin -- bait classification, supply sources, and the business organization. It includes a review of current regulatory measures affecting bait dealers, and recommendations for changes in the bait dealers license law which is under current discussion.

BAIT CLASSIFICATION

Bait is classified into 5 major categories:

Minnows

Crappie bait - Small minnows, normally about 2 inches long. The most common species is the fathead minnow.

Walleye bait - Minnows measuring from 2 inches to 4 inches. They are commonly large fatheads, but can also be such species as common shiner, creek chub, species of dace, emerald shiner, sucker, and golden shiner.

Northern pike and musky bait - Bait more than 4 inches long. Musky bait is usually at least 8 inches long and is mainly suckers or creek chubs.

Aquatic invertebrates

Crabs and crayfish - Soft crayfish are premium bait for smallmouth bass. Tails are often used for bait, particularly for perch, in which case large specimens are best. There are several species.

Dragonfly nymphs - Immature stages of the dragonfly that lead an aquatic life. Often they are incorrectly called hellgramites.

Mayfly nymphs - These are the nymphs of large species of mayfly, primarily the genus *Hexagenia*. They commonly are called wrigglers and are harvested from silt bottoms in streams and used for panfish bait, mostly in winter.

Aquatic annelids:

Leeches - They reach their greatest abundance and are harvested from winterkill lakes.

Terrestrial invertebrates:

Worms - Angleworms are the most common bait. They also go by the name of nightcrawlers or dew worms, genus Lumbricus. Leafworms, or manure worms, are small red worms, commonly cultivated. They are in the genus Helodrilus. Normal garden worms are seldom sold as bait and supply is limited to early spring.

Fly and insect larvae - Grubs of various fly species are used as wintertime baits for panfish. They are normally raised in batch cultures. Other insects, such as crickets, may be sold as bait, but they are not common in Wisconsin.

SUPPLY SOURCES FOR BAIT

Since wholesalers supply the bulk of all bait, this report discusses their primary source of supply. Bait species are considered in order of decreasing importance.

Fathead Minnows (Pimephales promelas)

The fathead minnow is a product of winterkill lakes, prospering when there is little competition from predacious species. Wisconsin has several winterkill lakes, particularly in northwestern Wisconsin, notably Polk and St. Croix counties. But the greatest source of fathead minnows is the many shallow Minnesota lakes. Most large Wisconsin wholesale dealers travel to Minnesota to buy their bait and some travel as far as South Dakota.

The fathead makes up at least 50% of the crappie minnows sold in the warmer months. But the supply of fatheads is sensitive to winterkill conditions and drought conditions, and the fathead can be scarce in poor years. Since the source of supply is largely out-of-state, Wisconsin regulations affecting out-of-state dealers and the regulations of supplying states have a significant impact on the bait industry. Fatheads are harvested by wire box trap or seine.

Golden Shiners (Notemigonus crysoleucas)

Golden shiners are a product of weedy lakes and winterkill lakes, but they are seldom harvested in Wisconsin. The primary source of supply is rearing ponds in the South. Wisconsin dealers truck golden shiners from Arkansas for sale and distribution in Wisconsin, mainly in winter.

Creek Chubs (Semotilus atromaculatus) and Common Shiners (Notropis cornutus)

These species are primarily a product of stream trapping and probably are the most important wild species utilized as bait. They make up a large percentage of the walleye bait sold.

Common Suckers (Catostomus commersoni)

Many suckers are raised for bait by taking eggs and rearing them to the preferred size. A number of these rearing ponds are located in northwestern and southwestern Wisconsin. Suckers are also harvested from streams by trapping. Sucker rearing and harvesting is probably the largest segment of domestic bait production. Traps and seines are used for harvest.

Emerald Shiner (Notropis atherinoides)

This species is a common winter bait. Most emerald shiners are harvested from the Great Lakes through dipnetting in the harbors at night. They also are harvested from rivers.

Other Minnow Species

Some of the domestic catch of minnows includes common shiner, long-nosed dace, red-bellied dace, mud-minnows and other species. Each can be locally important. Red-bellied dace is commonly used in the northern part of the state. Minnows are caught by trapping.

Crayfish

When compared with minnows, crayfish are modestly used for bait. Some minnow dealers do not even handle them. Most crayfish harvested and sold are either species common to lakes and streams or burrowing species common to marshes. Currently the dominant species taken in northern Wisconsin lakes is the rusty crayfish (Orconectes rusticus). It is an exotic formerly centered in Ohio and has probably displaced such native species as O. virilis and O. propinquus in some environments. Southern Wisconsin dealers sometimes obtain marsh species, probably Procambarus blandingii acutus and Cambarus diogenes, which become abundant in marshes in the southern part of the state. Crayfish are also extensively harvested for food or market in Oshkosh and Green Bay. Dealers in the Amherst area and Pelican Lake deal extensively with crayfish trapped in the north. Trapping is the most common means of taking crayfish.

Dragonfly Nymphs

There are numerous species of dragonfly nymphs. They are commonly found in winterkill ponds, lakes, and marshes where there is little or no fish predation. The nymphs are harvested in fine mesh nets or screen boxes worked through the vegetation in which the organisms are usually climbing. Locally they are in high demand as bait, particularly for perch in summer. Most of the supply comes from local collectors. It is a much less stable and organized market than the minnow market.

Mayfly Nymphs

Hexagenia species are the most valuable Mayfly nymphs because they are large (about 1 1/2 in long) and can be baited on a hook. They are caught by straining mud from stream silt banks through a screen box with meshes much like a window screen. Many larvae per shovel of silt can be extracted from good sites, but the nature of the harvest can greatly disturb the in-stream ecology. There does not seem to be a large or well-organized market for the species, probably because of limited production.

Leeches

Leeches have been growing in popularity and increasingly used for bait as an organized market develops. Leeches are also products of winterkill lakes, prospering in the absence of predation. Most are shipped from Minnesota, but some are harvested in northwestern Wisconsin. They are caught by baiting a perforated screen covered can with a chunk of fish or meat. The genus of most interest, Nepheleopsis, grows quite large -- several inches long. It forages on animal foods.

Angleworms (Lumbricus)

The angleworm or nightcrawler is an inhabitant of moist, rich soils and is commonly associated with golf courses. It is not cultured and tends to migrate at night. The main source of supply is moist pastures or mowed grasslands and lowspots. Most of Wisconsin's supply comes from the Toronto, Canada area. Angleworms are trucked from distant supply points in refrigerated semi-trucks. Only modest harvests of angleworms are made locally and funneled into local markets.

Leafworms (Helodrilus)

Leafworms are cultured in worm ranches. Their demand is much less than that for angleworms. The supply is also very local.

Fly Larvae

Fly larvae are also cultured. Specialized culture operations supply wholesalers, and some suppliers are located within the state. Fly larvae are in greatest demand for winter panfish fishing. The most common larvae are the rattailed maggot, a maggot of a fly in the Syrphidae family, or waxworms, the larvae of a Galleria moth. Goldenrod gall, maggots of another fly species (Eurosta), are harvested in the wild and are often used as bait.

Frogs

Very few dealers sell frogs as bait. The field frog or leopard frog is the species most often harvested.

Table 1. Total Number of bait dealer licenses sold in Wisconsin. 1978-80.

License Type	1978	1979	1980
Class A	280	292	326
Class B	<u>1,015</u>	<u>920</u>	<u>923</u>
Total	1,295	1,212	1,249

ORGANIZATION OF THE BAIT BUSINESS

Currently, Class A and B licenses are defined by the amount of bait sold. Although most businesses selling bait will exceed the maximum for a Class B license (\$2,000), more Class B licenses are sold each year than Class A. Between 1,200 and 1,300 licenses are sold annually, and 73 to 78 percent of these are Class B licenses (Table 1).

The bait business consists of wholesalers, retailers, and collectors. The wholesalers are the major suppliers of live bait and their operations may cover the whole state and extend into adjoining states (Fig. 1). Their operating territories change as operations expand and contract. The wholesaler has large storage tanks to keep a several-day stock of bait and large refrigerators to store invertebrates. Normally, he possesses a large truck for hauling large quantities of bait long distances and several smaller trucks with a tank and refrigerator on each to supply the retail outlets. A wholesaler will commonly have a hundred or more retail outlets and trucks his own bait in from out of state.

On the other hand, the individual retail shop simply has a number of bait tanks for various types of bait. The retailer is supplied weekly or more often by the wholesaler.

The wholesaler or retailer commonly has his supplies augmented by local collectors who may supply minnows, crayfish or other bait. Local collection occurs most often in the northern part of the state where there are more waters with bait species.

LAWS AFFECTING THE WISCONSIN BAIT BUSINESS

About 90% of the live bait used in Wisconsin flows through wholesalers and 25-50% of this comes from out-of-state sources. Thus, Wisconsin laws affecting nonresidents and laws of supplying states are very important to the operation of the bait business. There are many differences between bait dealers license laws in Wisconsin and those of adjacent states, and more equity may be desirable (Table 2).

Wisconsin limits licenses to residents and prohibits nonresidents from obtaining a license as a minnow dealer. So, although a primary source of supply for minnows is Minnesota, Minnesota suppliers cannot deliver in Wisconsin. Similarly, Wisconsin dealers cannot be licensed in Minnesota. But Minnesota does have a resident export dealers license and what actually occurs is either clandestine delivery of minnows by Minnesota dealers to Wisconsin wholesalers or other outlets, or Wisconsin dealers get an exporters license from Minnesota at a cost of \$510 (1982). Wisconsin dealers also market in northern Michigan, Iowa, and Illinois, where out-of-state licenses are available.

The commerce barriers on shipping minnows between Wisconsin and Minnesota are currently under discussion. Some from Wisconsin would like to see a haulers license, similar to Minnesota, so Minnesota minnows could be delivered. On the other hand, the Wisconsin dealers close to Minnesota are concerned about competition with suppliers across the border.

TABLE 2. A comparison of Wisconsin bait dealers license laws with those of adjoining states.

Regulatory Measure	Illinois	Iowa	Michigan	Minnesota	Wisconsin
Bait dealers license	\$25 wholesale bait dealers license, \$5 retail license. Nonres. fish dealer \$100.	Limited to residents (\$25) and out-of-state residents where same privileges available \$50.	Requires license for commercial purposes. \$5 for retail and \$25 for wholesale. License provides 4 crew cards. Non-residents same as state.	Residents only \$50 for license and \$10 for each vehicle. \$5 helper's license.	Residents only. Class A - \$2000 or more sales. Class B-less than \$2000 sales. \$25 and \$5, respectively.
Bait defined	Live minnows. Wholesale or retail dealers may sell frogs.	Minnows, frogs or clams.	Chubs, shiners, suckers, dace, stonerollers, mudminnows, wigglers or any other insect, nymph or larvae.	Minnow family except carp and goldfish, mudminnows, sucker family, bullheads, tullibees, herring, whitefish, goldeyes and mooneyes. Leeches. Retail sale of more than 24 dozen.	Any species of frog, crayfish or minnow used for bait purposes. Minnows include suckers, mudminnows, madtom, stonecat, killifish, sticleback, trout, perch, darter, sculpin and all cyprinids except goldfish and carp.
Sale defined	Bait sold to any other dealer or wholesaler. Sale to licensed wholesaler by individual is exempt.	Any sale of bait.	Commercial purposes shall be offering for sale, selling or giving to others.	Retail: sale of retail from established place of business. Resold or transported at wholesale.	Any person who buys for resale, barter or gives or sells bait in the amount of \$2,000 or more.
Gear	20-foot minnow seine; 24-inch minnow trap; 4-foot dip net.	15-foot seine for normal use. 50-foot foot seine allowed for dealer. 4-foot dip net. Traps not to exceed 36 inches.	8-foot dip net or 30-foot seine. 80-foot seine in Gr. Lakes. Minnow traps.	50-foot seine for dealers. 25-foot for others. No size on traps.	25-foot seine and 8-foot dip nets. Traps not to exceed 24 inches. 50-foot seine allowed in boundary waters and 75-foot in outlying waters.
Transport	Only residents may transport out-of-state. \$500 license. Nonres. may sell with a nonres. fish dealers license.	No restrictions.	\$5 permit to transport in or outside; residents only.	Permit to transport through state required. Export license required. Unlawful to use imported bait.	No limitation.

(Continued)

TABLE 2 (Cont.)

Regulatory Measure	Illinois	Iowa	Michigan	Minnesota	Wisconsin
Rough fish	Sale or transportation prohibited.	Sale or transportation prohibited.	Prohibits use of carp, goldfish, and lamprey.	Prohibit transport of live carp minnows.	Prohibits bringing into state stocking or introduction of any fish or spawn unless permit obtained.
Penalty	Business offense. Fine of not less than \$1,000 nor more than \$5,000.	Misdemeanor. Penalty up to \$100.	Not less than \$10 nor more than \$100.	Misdemeanor. Not less than \$100 nor more than \$1,000.	Fine of not more than \$100 plus an assessment equal to 75% of forfeiture.
Special regulations	Aquatic breeders license required for rearing (\$50).	Hatchery license required for rearing.	Pump for invertebrates prohibited; can't harvest wrigglers from trout streams. \$5 permit for wrigglers.	Can't be taken in trout streams.	Permits required for trout streams. Leeches and invertebrates not included. Private fish hatchery license required for rearing.
Importation	License valid only in location described. Separate license for each truck.	Importation of non-native species prohibited without a permit.	Prohibits importation but may transport through state.	Prohibits importation	Permit required.
Export	Sale of any fish out of state requires exporters license.	Prohibited.	Prohibited.	Resident exporters license required. \$200 license plus \$10 for each vehicle. Nonresident exporter's license \$400 plus \$10 each vehicle.	No limitation.
Report	Not required.	Not required.	Not required.	Report on forms supplied by state.	Shall report as required by Department.

Figure 1. Licensed bait dealers by county, 1980. The top number indicates the total number of bait licenses sold in the county. The middle number indicates A licenses. The last number indicates B licenses.

Suppliers are also concerned about the types of gear which state laws allow. Normal bait harvest is governed by regular fishing laws which permit very restricted gear including dipnets; minnow traps, not to exceed 24 inches in length or 16 inches in diameter or square; and a seine, not to exceed 25 feet long and 6 feet deep. These forms of gear are not really adequate for the minnow dealer who requires the use of box traps and larger seines at times.

Probably the most important type of commercial gear is the box trap. Minnows readily lead into box traps seasonally and are caught in large numbers. Although not permitted by law, box traps can be used if suppliers obtain a special permit from the Department of Natural Resources. Minnow dealers can also obtain special permits for use of larger seine gear. In 1981, 52 permits were issued from DNR district offices (Table 3). But administration of this permit system has been uneven, permits being granted in some areas and refused in others.

Table 3. Permits granted to U.S. districts to use specialized gear for harvesting minnows.

District	Number of permits	Waters permits granted for	Type of permit		
			Larger seine	Larger traps	Other
Southern	0	0	-	-	-
Southeast	0	0	-	-	-
Lake Michigan	15	Trout stream	12	3	-
West Central	2	Cedar Lake, Saint Croix County Ponds	12	3	-
North Central	26	26	5	18	refuge trapping
Northwest*	9	9	7	9	3-foot nets
Total	52				

* Six permits issued to harvest sucker eggs.

Another area of concern in the bait business is the ability to harvest sucker eggs and hatch suckers for pond culture. Dealers must be in a position to obtain fry for stocking their ponds. Again, the taking of sucker eggs is allowed only by special permit. Six such permits were granted in 1981 for some lakes in northwestern Wisconsin.

The bait business will always be a potential source of exotic species spread with sources of supply from such widely scattered places as Arkansas,

South Dakota, the Great Lakes, and Minnesota. Examples of this problem are evident now. The spread of rusty crayfish is the most significant exotic species recently introduced. Smelt, another exotic species, have also become very common in several inland lakes. The introduction of smelt undoubtedly occurred through the use of emerald shiners. Since some species can be harmful to native species, significantly affect the mix of native species, and even affect the habitat, there is concern about unlimited importation.

Under current bait laws, the term bait covers only minnows, crayfish and frogs used for bait. It does not cover other species or types of live bait, nor does it cover crayfish or frogs used for food or specimens. Possibly a wholesale fish dealers license would be required for frogs and crayfish sold to retailers as food. Leeches and dragonfly nymphs are also not covered. Some dealers feel that they too should be included under the bait dealers license law.

RECOMMENDATIONS

Current Wisconsin laws do not seem to be in accord with the nature of the bait business. Therefore, we should examine them and provide the laws necessary for smooth and effective operation of the bait business, yet assure the protection of the resource. Since a significant fraction of Wisconsin's supply comes from out of state, protection of the Wisconsin resource is one factor in decision making. But the greater concern with these out-of-state supplies may be the introduction of unwanted species.

A license structure for the bait industry should pick up all who harvest, sell, and resell bait species. Organization of the industry suggests that there should be classes of dealers, collectors, retailers, and wholesale dealers. Broad definitions truly reflecting the economic organization of the industry will be natural categories and allow the DNR to more successfully monitor harvest of resources and provide management services to the bait harvest industry. This background should be helpful in shaping changes in the bait dealers license law.